~~MERRILL HOFFMAN~~

N = 11/4/85

PRELIMINARY NOTES AND COMMENTS

ON U.S. ARMY C. OF E. FEASIBILITY STUDY: ~~Hackett~~ JACKIE

PCB DREDGING AND DISPOSAL -- NEW BEDFORD

RECEIVED

NOV 12 1985

REGION I
WASTE MGMT. DIVISION

Part One of Three (ENC-4153)

Superfund Records Center
SITE: New Bedford
BREAK: 4.6
OTHER: 221000

Not Listed in Order of Importance

1. Selenium

Recommend spot-checks of core samples in north section of study area (Note: GIDLAB found "Se" in significant amounts--GIDLAB EN-118, 1974--in water and sediments above Coggeshall Bridge. Discharges no longer exist--but present values, if any, should be determined.

2. Dibenzo Furans and Hexachloro Benzene

These are contaminants of PCB. We recommend spot-checking some of the highly contaminated (PCB = 50,000 ppm or more) for these chemicals are highly toxic. DF and HCB may be estimated at 0.001% to 0.7% of the PCB.

e.g., at 0.1% of 50,000 ppm = 500 ppm DF or
at 0.01% of 50,000 ppm = 50 ppm
even 0.001% of 200,000 = 20 ppm
These are toxic substances and amounts;
Note: Guinea pig has LD_{50} of 5-10 ug/kg.

3. Tide Gate

We recommend an automatic tide gate or gates be considered at the Coggeshall Bridge (inside a culvert) during dredging to minimize tidal flux of PCB and other contaminants.

4. Standard Methods: Sampling and Analyses

Sampling and testing should follow ASTM Standard Procedures wherever possible--if no ASTM Procedure is available, use APHA, EPA, ASCE, USGS or SCS Procedures.

We recommend (for example):

PRELIMINARY NOTES AND COMMENTS

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4. Standard Methods: Sampling and Analyses (continued)

a. ASTM D4411-84

Sampling fluvial sediment in motion

b. NAWDEX USGS

Chapter 3, Sediment (100 pp±)
"National Handbook of Recommended Methods of Water Data Acquisition"

5. Standard Methods: Leachate Tests

Proposed lab tests "developmental in nature" are questionable for this actual problem. Standard leachate, contaminant transport and leachate extract tests should be utilized, and also existing published tests.

We recommend (for example):

a. ASTM STP 746, "Permeability and Ground Water Transport," Zimmie/Riggs, D-18.

b. ASTM STP 760, "Hazardous Solid Waste Testing," Conway/Malloy, D-18 and D-19, Leachate and Leachate Extract Tests.

c. Springer-Verlag, "Handbook of Environmental Chemistry," Vol. 2, Part A, "Reactions and Processes," Hutzinger.

d. ASTM D18.04, G. W. Movement and Hydrology of Soil.

e. ASTM D34.02, Solidified Waste Integrity.

6. Chemical Clarification Tests (Polymer)

Recommend this project be omitted (a) as probably not useful or cost effective. "It is doubtful that the cost of the polymer will be worth the results achieved"--Hudson River PCB sediments/cf. Tofflemire/Zimmie, Kepone Seminar, Easton, MD, Sept. 1977; et sequitur; e.g., DEC Technical Paper #55, "PCB in Upper

PRELIMINARY NOTES AND COMMENTS

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PCB DREDGING AND DISPOSAL -- NEW BEDFORD

6. Chemical Clarification Tests (Polymer) (continued)

Hudson River: Sediment Distributions, Water Interactions and Dredging--January 1979--and Murakami/Takeishi "Behavior of Heavy Metals and PCBs in Dredging and Treating Bottom Deposits," Tokyo, Japan, 1976, and (b) satisfactory clarification in field projects achieved in Hudson River studies, Yokkaichi Harbor, Japan and Europe without polymers.

7. Sediment Stabilization Tests

a. Commend Proposed Fly-ash Tests (Item #10, p. 15 of U.S. Army EFS)

Useful for cementatious solidification (e.g. Trief or Poz-o-tek) and chelation of contaminants, reducing leachate. Fly-ash with or without lime: Evaluate each cf. C & EN, April 5, 1976, and GIDLAB, 10/12/74, "Dredging Fly-ash and Sludge Disposal," p. 205-206, GIDLAB Report EN-799 for SRPEDD.

b. Lime Tests (Commend this Study)

Lime neutralizes site acidity, reduces bacteria, inhibits metals (most) leachate, increases site impermeability.

- References: Pipeline Addition of Lime/Cement--1985--Paul Anderson, PE, DEQE, SE Region.

- P.T. Gidley, Addition of Lime to Dredgings of New Bedford Harbor On-Site or Via Venturi,--1972--Report for New Bedford Harbor Committee

Lime and Fly-ash for Consolidation

8. Disposal Site Drainage and Monitoring

Whether lined or unlined, the site must have a drainage system at the bottom for (a) detection of Contaminants and (b) pump-out if needed (cf. GIDLAB Protocol 101 and 102 for SEMASS Ash Disposal).

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9. Ground-Water Contamination

If disposal site is alongside or on-site, there is no ground-water supply in this geologic basin--hence any failure is substantially "fail-safe." ∴ Exhaustive and expensive tests of leachate (p. 13-14, EFS) are not warranted.

Note: Scope (p. 2, EFS) confines study to on-site and alongside sites.

10. Sampling Tube Procedure (p. 5, EFS)

The procedure drills a small hole in tube "at the sediment-water interface," allowing excess water to escape (on removal of tube from water).

This procedure allows considerable fine particles containing significant amounts of PCB and metals to escape. Better procedure is to transport and store capped tubes 48 hours for interface settling and then drill hole one inch above interface.

11. Definition of "Clean" Sediment

The proposed definition 1-2 ppm of PCB is altogether too restrictive (this is the edible amount for fish!). The limit would greatly increase testing costs and would not be meaningful for this project. We recommend 50 ppm as the "clean" limit.

12. Local Clay Liner Testing (p. 16, EFS)

There are no suitable local clays available. There are clays which meet a Civil Engineering definition (size) of clay but not chemical defined clays (cf. GIDLAB Clay Chart)--Probably the nearest suitable clays are in Southern New Hampshire.

13. Contained Sites

a. Sites should not be considered contained by merely capping in the river bed--such "caps" are subject to erosion, flood-

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13. Contained Sites (continued)

scouring, future installations of cables and conduits, unauthorized or unknowing dredging for land filling (cf. Terminal Case in Fairhaven).

b. Containment should isolate existing hot-spots "as-is" as far as possible to minimize contaminant movement and disposal; then pump balance behind contained areas or into alongside areas (Shell Cove, New Bedford).

Containment may be by any proven impermeable dam (e.g., asphalt revetment, Baron W.F. Van Asbeck, M.I.C.E., "Bitumen in Hydraulic Engineering, Shell, London, 1955) but the preferred on-site containment is by special steel walls and piling (e.g., ARBED HZ Wall Systems) as such systems do not waste space and are readily installed by local marine contractors.

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